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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/656,529	09/05/2003	Richard D. Breault	C-3053	9525
7590	01/07/2005		EXAMINER	
Stephen E. Revis 1 Abbottsford Avon, CT 06001-3953			CHANEY, CAROL DIANE	
			ART UNIT	PAPER NUMBER
			1745	
DATE MAILED: 01/07/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/656,529

Applicant(s)

BREault ET AL.

Examiner

Carol Chaney

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 05 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 September 2003 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 9-5-2003.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The limitations of claims 1, 5, 8, and 14 are indefinite because the length of time for which antifreeze should be circulated is not definite. Applicants' claim 1 recites "circulating anti-freeze ... for at least as long as liquid water does not circulate through the water flow passages." Similarly, claims 5 and 14 recite the limitation "stack operation without water circulating..." and claim 8 recites "circulating anti-freeze ... for the period of time that no liquid water circulates through the water circulation system." In each instance, because a step of, or conditions for, circulating liquid water are not recited, it is indefinite how long the anti-freeze should circulate.

The terms "normal operating levels" in claim 6, "normal operating temperature" in claims 15 and 17, and "normal stack operating temperatures" in claim 18, are relative terms which render the claims indefinite. The term "normal" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Although applicants' specification at page 5, lines 16-18 recites "normal cell design operating temperatures of, for example, 65°C-85°C", the temperatures recited

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are interpreted as only suggestive of a "normal operating level" and not a definition or standard.

In claim 7, the phrase "sufficient liquid water" is indefinite because the purposes for which water should be "sufficient" are not defined.

Claim 8 is indefinite because the phrase "when ambient temperature may be below the freezing point of water" recites a possible, rather than definite, event.

In claim 11, the phrase "wherein sub-freezing temperatures are expected..." renders the claim indefinite because "expected" weather is not definite, since it may not necessarily occur.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, and 3-5 are rejected under 35 U.S.C. 102(e) as being anticipated by Thompson et al., US 2004/003396 A1.

Thompson et al. disclose a method of operating a fuel cell which has been frozen. The fuel cell is preferably a polymer exchange membrane (PEM) fuel cell. (paragraph 22). The cell includes conventional water transport plates (paragraph 25 and coolant. (Paragraph 29.) "Coolant" is interpreted as synonymous with "antifreeze". When the fuel cell is shut down, water from the cell inlets areas and water from reactant flow fields is removed by purging the cell with dry gas. (Paragraph 31.) When the cell is started from a frozen state, dry reactants are provided to the cell. An exothermic reaction which facilitates thawing of the fuel cell results. (Paragraph 33.) Coolant circulates when the cathode outlet temperature is greater than 50°C. Humidification of the fuel cell reactants starts when the stack reaches 5°C and prevents drying out of the fuel cell stack. (Paragraph 36.) Thus, the stack is maintained in conditions to prevent fuel cell dry out, and the temperature at which the coolant maintains the fuel cell stack will be "low enough to prevent cell dry out for at least as long as liquid water does not circulate through the water flow passages.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hayashi et al., US 2002/0146610 A1

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Reiser US Patent 6,777,115 B2

Ding US Patent 6,632,555 B2


Roberts et al. US Patent 6,329,089 B1

Fletcher et al. US Patent 5,798,186

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carol Chaney whose telephone number is (571) 272-1284. The examiner can normally be reached on Mon - Fri 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Carol Chaney
Primary Examiner
Art Unit 1745

3 January 2005